

WHAT IS CLAIMED IS:

1. A method for providing location privacy  
for a terminal node (MN)

5 in communication with

a communication partner node (CN)

in a communication network system comprising

at least a first communication network (HN, VN),  
wherein a respective node (MN) communicating via

10 said communication network system is identified  
by its permanent network address (MN\_PA) and  
addressable by a temporary network address  
(MN\_CoA),

at least one server entity (LPS),

15 a plurality of agent entities (LPA1, ..., LPA<sub>n</sub>),  
wherein each of said at least one server entities  
(LPS) maintains

a record of said plurality of agent entities  
(LPA1, ..., LPA<sub>n</sub>) and their respective location

20 within the network system,

**said method comprising the steps of:**

requesting (S41), by said terminal node (MN), said at  
least one server entity (LPS) for location privacy,

25 selecting (S42), at said at least one server entity  
(LPS), a specific one of said plurality of agent entities  
(LPA1, ..., LPA<sub>n</sub>), based on data maintained in said record  
of said server entity and said temporary network address of  
said requesting terminal node, and

30 communicating (S46) messages between said terminal  
node (MN) and said communication partner node (CN) via said  
selected one (LPA) of said agent entities.

2. A method according to claim 1, wherein  
said request includes

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the network address of said communication partner node (CN) with which a communication is desired to be performed,

the permanent network address (MN\_PA) of said  
5 requesting terminal node (MN), and

said temporary network address (MN\_CoA) of said requesting terminal node (MN) by which it is addressable within said communication network system.

10 3. A method according to claim 1, wherein said respective location of said agent entities is derivable based on a network domain to which the agent entity is assigned, the domain being represented by a network address range in the network.

15 4. A method according to claim 3, wherein said selecting is based on said known network address (CN\_A) of said communication partner node (CN) with which a communication is desired to be performed, which is included  
20 in said request.

5. A method according to claim 4, wherein said selecting comprises the steps of

25 first retrieving a first network domain represented by a network address range to which address range the temporary address (MN\_CoA) of the requesting terminal node (MN) belongs,

30 second retrieving a second network domain represented by a network address range to which address range the address (CN\_A) of the communication partner node (CN) belongs, and

determining the agent entity (LPA) to be selected, based on said retrieved information.

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6. A method according to claim 1, further comprising a step of

informing (S43a) said requesting terminal node (MN) about the selected agent entity (LPA) before communicating  
5 messages.

7. A method according to claim 6, further comprising the steps of

creating (S44), by said terminal node at said selected agent entity (LPA), a mapping between  
10 the terminal node's permanent network address (MN\_PA) and its temporary network address (MN\_CoA), and creating (S45), by said terminal node at said communication partner node (CN), a mapping between

15 the terminal node's permanent network address (MN\_PA) and the selected agent entity's address.

8. A communication network system, comprising

at least a first communication network (HN),  
20 wherein a respective node (MN) communicating via said communication network system is identified by its permanent network address (MN\_PA) and addressable by a temporary network address (MN\_CoA),  
at least one server entity (LPS),  
25 a plurality of agent entities (LPA1, ..., LPA<sub>n</sub>), wherein each of said at least one server entity (LPS) maintains

a record of said plurality of agent entities (LPA1, ..., LPA<sub>n</sub>) and their location within the network  
30 system

9. A communication network system according to claim 8, wherein said respective location of said agent entities is derivable based on a network domain to which the agent

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entity is assigned, the domain being represented by a network address range in the network.

10. A communication network system according to claim 8,  
5 wherein

to each of said communication networks there is associated one of said server entities.

11. A communication network system according to claim 8,  
10 wherein

to each of said communication networks there is associated a plurality of said agent entities.

12. A server entity (LPS), comprising

15 - a database means adapted to maintain  
a record of a plurality of agent entities (LPA1, ..., LPA<sub>n</sub>) and their respective location within a communication network system, and

- a processing means adapted to select a specific one  
20 of said plurality of agent entities (LPA1, ..., LPA<sub>n</sub>), based on data maintained in said record and a temporary network address (MN\_CoA) of a requesting terminal node (MN).

25 13. A server entity according to claim 12, wherein said respective location of said agent entities is derivable based on a network domain to which the agent entity is assigned, the domain being represented by a network address range in the network.

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14. A server entity according to claim 13, wherein said processing means comprises  
selection means which comprises

first retrieving means adapted to retrieve a first  
35 network domain represented by a network address range to

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which address range the temporary address (MN\_CoA) of the requesting terminal node (MN) belongs,

second retrieving means adapted to retrieve a second network domain represented by a network address range to which address range the address (CN\_A) of the communication partner node (CN) belongs, and

determination means adapted to determine the agent entity (LPA) to be selected, based on said retrieved information.

15. A server entity according to claim 12, wherein said record is configured by a network operator dependent on a topology of a communication network forming a communication network system.

16. A server entity according to claim 12, wherein said record is configured by a network operator dependent on a topology of a communication network forming a communication network system, and said server entity is adapted to extend said record by adding record information from other server entities within said communication network system.

17. A server entity according to claim 12, further comprising transmission means adapted to receive and send information used for forming and maintaining said record, receive requests from terminal nodes (MN), and to send processing results to a requesting terminal.

18. A server entity according to claim 17, wherein said transmission means is adapted to send processing results to a selected agent entity.

19. An agent entity (LPA1, ..., LPA<sub>n</sub>), comprising

a memory means adapted to cache a mapping  
of a permanent address identifying a terminal  
node (MN)

to a temporary address (CoA) of said terminal  
node (MN) indicative of a location of said terminal  
node (MN), and

routing means adapted

to forward data packets received from said  
terminal node (MN) to an addressed communication  
partner node (CN), and

to forward data packets received from said  
communication partner (CN) to said terminal node (MN),  
wherein said forwarding is based on the cached mapping  
information in said memory means.

20. In a communication network system, comprising  
at least a first communication network (HN),  
wherein a respective terminal node (MN) communicating  
via said communication network system is identified by  
its permanent network address (MN\_PA) and addressable  
by a temporary network address (MN\_CoA),  
at least one server entity (LPS),  
a plurality of agent entities (LPA1, ..., LPA<sub>n</sub>),  
wherein each of said at least one server entity (LPS)

maintains

a record of said plurality of agent entities  
(LPA1, ..., LPA<sub>n</sub>) and their location within the  
network system,

wherein said terminal node is adapted to carry out the  
method according to claim 1.

21. A server entity according to claim 15, wherein  
said record is configured by a network operator dependent  
on a topology of a communication network forming a  
communication network system, and said server entity is

adapted to extend said record by adding record information from other server entities within said communication network system.

5 22. In a communication network system, comprising  
at least a first communication network (HN),  
wherein a respective terminal node (MN) communicating  
via said communication network system is identified by  
its permanent network address (MN\_PA) and addressable  
10 by a temporary network address (MN\_CoA),  
at least one server entity (LPS),  
a plurality of agent entities (LPA1, ..., LPA<sub>n</sub>),  
wherein each of said at least one server entity (LPS)  
maintains  
15 a record of said plurality of agent entities  
(LPA1, ..., LPA<sub>n</sub>) and their location within the  
network system,  
wherein said terminal node is adapted to carry out the  
method according to claim 2.

20 23. In a communication network system, comprising  
at least a first communication network (HN),  
wherein a respective terminal node (MN) communicating  
via said communication network system is identified by  
its permanent network address (MN\_PA) and addressable  
25 by a temporary network address (MN\_CoA),  
at least one server entity (LPS),  
a plurality of agent entities (LPA1, ..., LPA<sub>n</sub>),  
wherein each of said at least one server entity (LPS)  
30 maintains  
a record of said plurality of agent entities  
(LPA1, ..., LPA<sub>n</sub>) and their location within the  
network system,  
wherein said terminal node is adapted to carry out the  
35 method according to claim 3.

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24. In a communication network system, comprising  
at least a first communication network (HN),  
wherein a respective terminal node (MN) communicating  
via said communication network system is identified by  
its permanent network address (MN\_PA) and addressable  
by a temporary network address (MN\_CoA),  
at least one server entity (LPS),  
a plurality of agent entities (LPA1, ..., LPA<sub>n</sub>),  
wherein each of said at least one server entity (LPS)

maintains  
a record of said plurality of agent entities  
(LPA1, ..., LPA<sub>n</sub>) and their location within the  
network system,  
wherein said terminal node is adapted to carry out the  
method according to claim 4.

25. In a communication network system, comprising  
at least a first communication network (HN),  
wherein a respective terminal node (MN) communicating  
via said communication network system is identified by  
its permanent network address (MN\_PA) and addressable  
by a temporary network address (MN\_CoA),  
at least one server entity (LPS),  
a plurality of agent entities (LPA1, ..., LPA<sub>n</sub>),  
wherein each of said at least one server entity (LPS)

maintains  
a record of said plurality of agent entities  
(LPA1, ..., LPA<sub>n</sub>) and their location within the  
network system,  
wherein said terminal node is adapted to carry out the  
method according to claim 5.

26. In a communication network system, comprising  
at least a first communication network (HN),

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wherein a respective terminal node (MN) communicating  
via said communication network system is identified by  
its permanent network address (MN\_PA) and addressable  
by a temporary network address (MN\_CoA),  
5 at least one server entity (LPS),  
a plurality of agent entities (LPA1, ..., LPAn),  
wherein each of said at least one server entity (LPS)  
maintains

a record of said plurality of agent entities  
10 (LPA1, ..., LPAn) and their location within the  
network system,  
wherein said terminal node is adapted to carry out the  
method according to claim 6.

27. In a communication network system, comprising  
at least a first communication network (HN),  
wherein a respective terminal node (MN) communicating  
via said communication network system is identified by  
its permanent network address (MN\_PA) and addressable  
20 by a temporary network address (MN\_CoA),  
at least one server entity (LPS),  
a plurality of agent entities (LPA1, ..., LPAn),  
wherein each of said at least one server entity (LPS)  
maintains

a record of said plurality of agent entities  
(LPA1, ..., LPAn) and their location within the  
network system,  
wherein said terminal node is adapted to carry out the  
method according to claim 7.

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